

adaptec

USER'S REFERENCE



adaptec

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Printed in Singapore
STOCK NO.: 511502-00, Rev. D RQ 6/98

SCSI CARD 2940UW

••••• SCSI Card 2940UW

User's Reference

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Understanding SCSI

SCSI (pronounced "scuzzy") stands for Small Computer Systems Interface. SCSI is an industry standard computer interface for connecting SCSI peripherals (such as a hard disk drive, CD-ROM drive, or scanner) to a common SCSI bus.

A SCSI bus is an electrical pathway that consists of a SCSI card (such as the SCSI Card 2940UW) installed in a computer and one or more SCSI peripherals. SCSI cables are used to connect the peripherals to the SCSI card.

For the SCSI bus to function properly, SCSI IDs must be assigned to SCSI devices (SCSI peripherals and SCSI card), and the SCSI bus must be properly terminated.

SCSI IDs

Each peripheral attached to the SCSI Card 2940UW, as well as the SCSI Card 2940UW itself, must be assigned a unique SCSI ID number from 0 to 15. A SCSI ID uniquely identifies each SCSI device on the SCSI bus and determines priority when two or more devices are trying to use the SCSI bus at the same time.

Refer to the peripheral's documentation to set the SCSI ID. Here are some general guidelines for SCSI IDs:

- For internal SCSI peripherals, the SCSI ID usually is set by configuring a jumper on the peripheral.
- For external SCSI peripherals, the SCSI ID usually is set with a switch on the back of the peripheral.

- SCSI ID numbers don't have to be sequential, as long as the SCSI Card 2940UW and each peripheral has a different number. For example, you can have an internal SCSI peripheral with ID 0, and an external SCSI peripheral with ID 6.
- SCSI ID 7 has the highest priority on the SCSI bus. The priority of the remaining IDs, in descending order, is 6 to 0, 15 to 8.
- The SCSI Card 2940UW is preset to SCSI ID 7 and should not be changed. This gives it the highest priority on the SCSI bus.
- Most internal SCSI hard disk drives come from the factory preset to SCSI ID 0.
- If you have 8-bit (or narrow) SCSI peripherals, they must use SCSI IDs 0, 1, 2, 3, 4, 5, or 6. SCSI ID 0 is recommended for the first SCSI hard disk drive.
- If you are booting your computer from a SCSI hard disk drive connected to the SCSI Card 2940UW, the Boot Target ID setting in the *SCSISelect* utility must correspond to the SCSI ID of the peripheral you are booting from. By default, the Boot Target ID is set to 0. See *Boot Device Options* on page 15 to change the Boot Target ID.
- In Windows® 95, you can use the Device Manager to view the SCSI ID (and other details) assigned to each SCSI device installed.
- If you installed Adaptec® EZ-SCSI® software, you can use the SCSI Explorer utility to view the SCSI ID (and other details) assigned to each SCSI device installed.

SCAM Protocol

The SCSI Card 2940UW supports the SCSI Configured AutoMati-cally (SCAM) protocol, which assigns SCSI IDs dynamically and resolves SCSI ID conflicts automatically when you start the computer. If your computer includes SCSI disk drives or other peripherals that support SCAM, you do not need to manually assign SCSI IDs to these peripherals. To enable SCAM support, see *Configuring the SCSI Card 2940UW with SCSISelect* on page 12.

Terminating the SCSI Bus

To ensure reliable communication on the SCSI bus, *terminators* must be installed (or enabled) on the devices at the physical ends of the SCSI bus. The terminators on all devices between the physical ends must be removed (or disabled).

Since the method for terminating a SCSI peripheral can vary widely, refer to the peripheral's documentation for instructions on how to enable or disable termination. Here are some general guidelines for termination:

- Termination on internal SCSI peripherals usually is controlled by manually setting a jumper or a switch on the peripheral, or by physically removing or installing one or more resistor modules on the peripheral.
- Termination on external SCSI peripherals usually is controlled by installing or removing a SCSI terminator. On some external peripherals, termination is controlled by setting a switch on the back of the drive.
- By default, termination on the SCSI Card 2940UW itself is automatic (the preferred method). To manually set termination on the SCSI Card 2940UW, see *Configuring the SCSI Card 2940UW with SCSISelect* on page 12.
- Most SCSI peripherals come from the factory with termination enabled.

Troubleshooting

Have you reviewed the Troubleshooting Checklist provided in the *SCSI Card 2940UW Installation Guide*? You can resolve most problems by following the recommendations in the checklist. If you still experience problems, continue with this section.

Troubleshooting in Windows 95

When I start Windows 95, the system locks up when the Windows logo is displayed. How can I get the system to start so that I can verify that the SCSI card is functioning normally?

- 1 Start or restart your computer. View the messages that appear onscreen.
- 2 When the message "Starting Windows 95" appears, press and release the **F8** function key while the text is on your screen.
- 3 From the menu that is displayed, select **Safe Mode**. (It may take several minutes for Windows 95 to load.)
- 4 If the computer boots into safe mode, the core software is functional.

How can I tell if the SCSI Card 2940UW software driver is loading properly?

- 1 Start or restart your computer. Allow the computer to perform a normal startup.
- 2 Click the **Start** button, point to **Settings**, then click **Control Panel**.
- 3 Double-click the **System** icon.
- 4 Click the **Device Manager** tab.
- 5 Double-click the **SCSI Controller** icon. The software driver for the SCSI Card 2940UW is listed as "AHA-2940U / AHA-2940UW PCI SCSI Controller."
 - If the driver is listed, the SCSI Card 2940UW driver is loading properly.

- If the driver is listed but has an exclamation mark inside a yellow circle, the software driver may be in conflict with other hardware using the same resources. Double-click the icon to see the device status and possible solutions.
- If the driver is listed but has an "X" inside a red circle, the SCSI Card 2940UW software driver is disabled and isn't loading (see below).
- If the SCSI Controller icon or the SCSI Card 2940UW software driver is not listed, reinstall the driver (see below).



Note: Software upgrades (including downloadable drivers) for Adaptec products are available on the Adaptec Web Site at <http://www.adaptec.com>.

An "X" inside a red circle appears with the SCSI Card 2940UW software driver in Device Manager. What does this mean?

The SCSI Card 2940UW software driver is disabled and isn't loading. To enable the driver:

- 1 Double-click the SCSI Card 2940UW software driver in Device Manager.
- 2 Under the **General** tab, check the **Original Configuration (current)** box.

What if there is no SCSI controller icon under Device Manager, or the software driver for the SCSI Card 2940UW does not appear under Device Manager?

If the SCSI controllers icon or the software driver do not appear:

- 1 Double-click the **Add New Hardware** icon in Control Panel.
- 2 Select **Yes** on the second screen of the Add New Hardware Wizard to have Windows search for the SCSI Card 2940UW.
- 3 Follow the onscreen instructions.

If Windows 95 does not detect the SCSI card, run the Add New Hardware Wizard again:

- 1 Double-click the **Add New Hardware** icon in Control Panel.
- 2 Select **No** on the second screen of the wizard.

- 3 Select **SCSI controllers** on the next screen.
- 4 Select the model of your Adaptec SCSI Card.

If your Adaptec SCSI Card model is not on the list, you may be able to install SCSI card driver from the Windows 95 CD-ROM (or from the Adaptec EZ-SCSI Setup Diskette). Follow these steps:

- 1 Place the Windows 95 CD-ROM in your CD-ROM drive (or insert the Adaptec EZ-SCSI Setup Diskette in the floppy disk drive) and run the Add New Hardware wizard.
- 2 Select **No** on the second screen of the wizard.
- 3 Select **SCSI controllers** on the next screen.
- 4 Click the **Have Disk** button, then click the **Browse** button.
- 5 Look in the `\drivers\storage` directory of the CD-ROM (or the root directory of the EZ-SCSI Setup Diskette) and select the model of your SCSI card.

How can I check the status of a resource (for example, IRQ, Memory, I/O)?

- 1 Click the **Start** button, point to **Settings**, then click **Control Panel**.
- 2 Double-click the **System** icon.
- 3 Click the **Device Manager** tab.
- 4 Click **Computer**, and then click **Properties**.
- 5 On the **View Resources** tab, click the option button for the type of resource you want to check.
- 6 The setting and the hardware using the setting is displayed.
 - If a specific resource is not listed, the resource is not used by a device.
 - If a resource is listed more than once, the resource is used by more than one device.
 - If a resource is used by an unknown device, the resource is used but the device using the resource cannot be detected.

How do I use the Hardware Conflict Troubleshooter in Windows 95?

- 1 Click the **Start** button, then click **Help**.
- 2 From the **Contents** tab, double-click **Troubleshooting**.
- 3 Double-click **If you have a hardware conflict**.
- 4 Follow the step-by-step instructions in the Windows Help window.

Common Error Messages

"Device connected, but not ready"

The host received no answer when it requested data from an installed SCSI peripheral.

- Run **SCSISelect**® and set the **Send Start Unit Command** to **Yes** for the SCSI ID of the peripheral. (See *Configuring the SCSI Card 2940UW with SCSISelect* on page 12.)
- Make sure the drive is set to spin up when the power is switched on. (See the documentation for the peripheral.)

"Start unit request failed"

The SCSI Card BIOS was unable to send a Start Unit Command to the peripheral, or the peripheral failed to respond.

- Run **SCSISelect** and disable the **Send Start Unit Command** for the peripheral. Test the peripheral using the **Verify Disk Media** option of the disk utilities. (See *Using SCSI Disk Utilities* on page 19.)

"Time-out failure during..."

An unexpected time-out occurred.

- Verify the SCSI bus is properly terminated.
- Verify all cables are properly connected.
- Try disconnecting the SCSI peripheral cables from the SCSI card and then starting the computer. If the computer successfully restarts, one of the SCSI peripherals may be defective.

Using the SCSI Card 2940UW and SCSI Peripherals

This section provides useful information on using the SCSI Card 2940UW and your SCSI peripherals. For specific information, refer to the documentation that came with your SCSI peripheral.

Using SCSI Peripherals

Hard Disk Drives

- Every SCSI hard disk drive must be physically low-level formatted, partitioned, and logically formatted before it can be used to store data. SCSI hard disks are physically low-level formatted at the factory and do not usually need to be formatted again.

If you connected a new SCSI hard disk drive to your SCSI card, you must partition and logically format the drive. For DOS and Windows (3.x and 95) use the DOS Fdisk and Format commands (see your computer, DOS, and Windows documentation). For other operating systems, see your operating system documentation.

- If you are booting from a SCSI hard disk drive, make sure the Hard Disk (or Drives) setting in your computer's CMOS setup program is set to **None or No Drives Installed**, as is required for SCSI hard disk drives. See your computer documentation for details.
- If both SCSI and non-SCSI (for example, IDE) disk drives are installed, then the non-SCSI disk drive is typically the boot drive. If your computer supports BBS (BIOS Boot Specification), both SCSI and non-SCSI disk drives can coexist and you can specify which drive to boot from. Refer to your computer documentation for more information.

Scanners

- You may need to install the scanner manufacturer's proprietary software drivers. See your scanner's documentation for details.

Installing Multiple SCSI Cards

- You can install multiple SCSI cards in your computer; you are limited only by the available system resources (for example, IRQ settings, I/O port addresses, BIOS addresses, and so forth).
- Each SCSI card you install forms a separate SCSI bus with a different set of SCSI peripherals. SCSI IDs can be reused as long as the ID is assigned to a peripheral on a different SCSI card (for example, each SCSI card can have a peripheral with SCSI ID 2).
- If you have two or more SCSI cards, enable the BIOS on the boot SCSI card only; disable the BIOS on the remaining SCSI cards. The SCSI Card 2940UW ships with the BIOS enabled. You can disable the BIOS on any Adaptec SCSI Card by changing the default setting in SCSISelect.

Connecting the LED Connector

(Optional feature) Most computers have an LED disk activity light on the front panel. You may choose to disconnect the cable from the LED connector on the motherboard and connect it to the LED connector on the SCSI card. The LED on the front panel of the computer will light whenever there is activity on the SCSI bus (see Figure 1).



Note: If you are using non-SCSI disk drives (for example, IDE), you may not want to connect your computer's LED to the SCSI card, since the LED will no longer indicate non-SCSI disk activity.

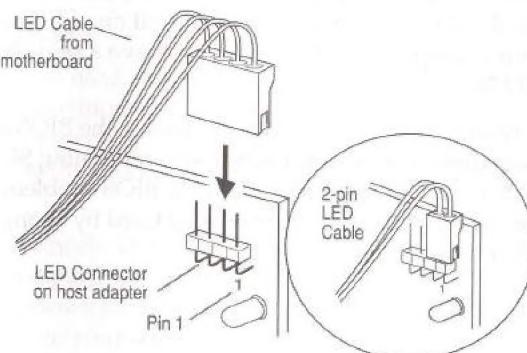


Figure 1. Connecting the LED Cable to the LED Connector

Using SCSI and IDE (or EIDE) Peripherals

- All Adaptec SCSI cards can co-exist with another controller (IDE, EIDE, RLL, etc.) installed in the computer.
- If you have both an IDE hard disk drive and a SCSI hard disk drive, the IDE drive is typically the boot drive. If your computer supports BBS (BIOS Boot Specification), both SCSI and non-SCSI disk drives can coexist and you can specify which drive to boot from. Refer to your computer documentation for more information.
- You cannot connect an IDE peripheral to a SCSI card, or a SCSI peripheral to an IDE card (controller).
- Disable the BIOS on the SCSI card if no SCSI hard disk drives are installed (see *Advanced Configuration Options* on page 17).

Replacing a Non-Adaptec SCSI Card with an Adaptec SCSI Card

- SCSI is standard, but how data is translated on to a hard disk drive is not. Each SCSI card manufacturer uses its own translation schemes for writing data to a disk. To use a hard disk drive previously connected to a non-Adaptec SCSI card, low-level format the drive after connecting to the Adaptec SCSI card. (See *Using SCSI Disk Utilities* on page 19.)



Caution: A low-level format destroys all data on the drive. Be sure to back up your data before performing a low-level format.

Configuring the SCSI Card 2940UW with SCSISelect

SCSISelect, included with the SCSI Card 2940UW, enables you to change SCSI settings without opening the computer or handling the card. SCSISelect also enables you to low-level format or verify the disk media of your SCSI hard disk drives. Table 1 lists the available and default settings for each SCSISelect option.



Note: The default settings are appropriate for most systems. Run SCSISelect if you need to change or view current settings, or if you would like to run the SCSI disk utilities. See the descriptions of each option on page 14.

Table 1. SCSISelect Settings

SCSISelect Option	Available Settings	Default Setting
SCSI Bus Interface Definitions:		
Host Adapter SCSI ID	0-15	7
SCSI Parity Checking	Enabled, Disabled	Enabled
Host Adapter SCSI Termination	Automatic, Low ON/High ON, Low OFF/High OFF, Low OFF/High ON	Automatic
Boot Device Options:		
Boot Target ID	0-15	0
Boot LUN Number ¹	0-7	0
SCSI Device Configuration:		
Initiate Sync Negotiation	Yes, No	Yes (Enabled)
Maximum Sync Transfer Rate	40.0 32.0, 26.8, 20.0, 16.0, 13.4, 10.0	40.0
Enable Disconnection	Yes, No	Yes (Enabled)
Initiate Wide Negotiation	Yes, No	Yes (Enabled)
Send Start Unit Command	Yes, No	No (Disabled)
BIOS Multiple LUN Support ²	Yes, No	No (Disabled)
Include in BIOS Scan ²	Yes, No	Yes (Enabled)

Table 1. SCSISelect Settings (Continued)

SCSISelect Option	Available Settings	Default Setting
Advanced Configuration Options:		
"Plug-and-Play" SCAM Support	Enabled, Disabled	Disabled
Reset SCSI Bus at IC Initialization	Enabled, Disabled	Enabled
Extended BIOS Translation for DOS Drives > 1 GByte	Enabled, Disabled	Enabled
Host Adapter BIOS	Enabled, Disabled	Enabled
Support Removable Disks Under BIOS as Fixed Disks ²	Boot Only, All Disks, Disabled	Boot Only
Display <Ctrl> <A> Messages during BIOS Initialization ²	Enabled, Disabled	Enabled
BIOS Support for Bootable CD-ROMs ²	Enabled, Disabled	Enabled
BIOS Support for Int 13 Extensions ²	Enabled, Disabled	Enabled

¹ Setting is valid only if Multiple LUN Support is enabled.

² Setting is valid only if host adapter BIOS is enabled.

Starting SCSISelect

Follow these steps to start SCSISelect:

- 1 Turn on or restart your system. During the startup process, pay careful attention to the messages that appear on your screen.
- 2 When the following message appears on your screen, press the **Ctrl-A** keys simultaneously (this message appears for only a few seconds):

Press <Ctrl><A> for SCSISelect (TM) Utility!
- 3 From the menu that appears, use the **↑** and **↓** keys to move the cursor to the option you want to select, then press **Enter**.



Note: If you have difficulty viewing the display, press **F5** to toggle between color and monochrome modes. (This feature may not work on all monitors.)

Exiting SCSISelect

Follow these steps to exit SCSISelect:

- 1 Press Esc until a message prompts you to exit (if you changed any settings, you are prompted to save the changes before you exit).
- 2 At the prompt, select **Yes** to exit, then press any key to reboot the computer. Any changes you made in SCSISelect take effect after the computer boots.

Using SCSISelect Settings

To select an option, use the **↑** and **↓** keys to move the cursor to the option, then press **Enter**.

In some cases, selecting an option displays another menu. You can return to the previous menu at any time by pressing **Esc**.

To restore the original SCSISelect default values, press **F6** from the main SCSISelect screen.

SCSI Bus Interface Definitions

- **Host Adapter SCSI ID**—Sets the SCSI ID for the SCSI card. The SCSI Card 2940 is set at 7, which gives it the highest priority on the SCSI bus. We recommend you do not change this setting.
- **SCSI Parity Checking**—When set to **Enable**, verifies the accuracy of data transfer on the SCSI bus. Leave this setting enabled unless any SCSI peripheral connected to the SCSI card does not support SCSI parity.

- **Host Adapter SCSI Termination**—Determines the termination setting for the SCSI card. The default setting is **Automatic**. We recommend that you leave this setting at Automatic. If you want to manually change this setting, Table 2 lists the termination configurations.

Table 2. Host Adapter SCSI Termination Configuration

If SCSI Peripherals are Connected to These Connectors on the SCSI Card 2940UW...	...Use this Setting
68-pin internal connector only	Low ON/High On
68-pin external connector only	Low ON/High On
50-pin internal connector only	Low ON/High On
68-pin internal and 68-pin external connectors	Low OFF/High OFF
50-pin and 68-pin internal connectors	Low OFF/High On
50-pin internal and 68-pin external connectors	Low OFF/High On



Caution: Do not connect SCSI peripherals to all three connectors on the SCSI Card 2940UW. Only two of three connectors can be in use simultaneously. See *Examples of Cabling Wide and Narrow External SCSI Peripherals* on page 21 for more information.

Boot Device Options

- **Boot Target ID**—Specifies the SCSI ID of your boot device.
- **Boot LUN Number**—Specifies which LUN (Logical Unit Numbers) to boot from on your boot device. Multiple LUN Support must be enabled (see *Advanced Configuration Options* on page 17).

SCSI Device Configuration



Note: To configure settings for a SCSI peripheral, you must know its SCSI ID (see *Using SCSI Disk Utilities* on page 19).

- **Initiate Sync Negotiation**—When set to **Enable**, initiates synchronous data transfer negotiation (Sync Negotiation) between the peripheral and SCSI card. Leave this setting enabled unless any attached SCSI peripheral connected to the SCSI card does not support synchronous negotiation.
- **Maximum Sync Transfer Rate**—Determines the maximum synchronous data transfer rate the SCSI card supports. If your peripheral is an *Ultra* SCSI peripheral, use the maximum value of 40.0. If your peripheral is not *Ultra* SCSI, select a transfer rate of 20.0.
- **Enable Disconnection**—When set to **Yes**, allows the SCSI peripheral to disconnect from the SCSI bus. Leave the setting at **Yes** if two or more SCSI peripherals are connected to the SCSI card. If only one SCSI peripheral is connected, changing the setting to **No** results in slightly better performance.
- **Initiate Wide Negotiation**—When set to **Yes**, the SCSI card attempts 16-bit data transfer (Wide negotiation). When set to **No**, the SCSI card uses 8-bit data transfer unless the SCSI peripheral requests wide negotiation.



Note: Set **Initiate Wide Negotiation** to **No** if you are using an 8-bit SCSI peripheral that hangs or exhibits other performance problems with 16-bit data transfer.

- **Send Start Unit Command**—When set to **Yes**, sends the Start Unit Command to the SCSI peripheral at bootup.
- **BIOS Multiple LUN Support**—When set to **Yes**, the SCSI card BIOS provides boot support for a SCSI peripheral with multiple LUNs. Leave this setting set to **No** unless you have a boot device with multiple LUNs.
- **Include in BIOS Scan**—When set to **Yes**, the SCSI card BIOS includes the peripheral as part of its BIOS scan at bootup.

Advanced Configuration Options



Note: Do not change the Advanced Host Adapter Settings unless absolutely necessary.

- **Plug-and-Play SCAM Support**—When set to **Enable**, the SCSI card automatically assigns SCSI IDs to SCSI peripherals that support the SCAM protocol (see *SCSI IDs* on page 1). The default is **Disable**, but you can set it to **Enable** even if you have a non-SCAM peripheral.
- **Reset SCSI Bus at IC Initialization**—When set to **Enable**, the SCSI card generates a SCSI bus reset during its power-on initialization and after a hard reset.
- **Extended BIOS Translation for DOS Drives > 1 GByte**—When set to **Enable**, provides an extended translation scheme for SCSI hard disks with capacities greater than 1 GByte. This setting is necessary only for MS-DOS 5.0 or above; it is not required for other operating systems, such as NetWare or UNIX. The extended translation scheme supports 2-GByte partitions on disk drives as large as 8 GBytes.

To partition a disk larger than 1 GByte controlled by the SCSI card BIOS, use the MS-DOS Fdisk command and specify a partition size that is a multiple of 8. (Fdisk rounds up to the nearest whole multiple of 8.)



Caution: Back up your disk drives before changing the translation scheme.

- **Host Adapter BIOS**—Enables or disables the SCSI card BIOS.
 - Set to **Enable** if you boot from a SCSI disk drive connected to the SCSI card.
 - Set to **Disable** if the peripherals on the SCSI bus are controlled by software drivers and do not need the BIOS. Generally, peripherals other than SCSI hard disks are controlled by software drivers and not by the BIOS.

- **Support Removable Disks Under BIOS as Fixed Disks**—Determines which removable-media drives are supported by the SCSI card BIOS. Choices are as follows:
 - **Boot Only**—Only the removable-media drive designated as the boot device is treated as a hard disk drive.
 - **All Disks**—All removable-media drives supported by the BIOS are treated as hard disk drives.
 - **Disabled**—No removable-media drives are treated as hard disk drives. Software drivers are required because the drives are not controlled by the BIOS



Caution: *Do not* remove a removable-media cartridge from a SCSI drive controlled by the SCSI card BIOS while the drive is on. You may lose data. To allow removability of the media while the drive is on, install the removable-media software driver and set **Support Removable Disks Under BIOS as Fixed Disks** to **Disabled**.

- **Display <Ctrl> <A> Messages during BIOS Initialization**—When set to **Enable**, the SCSI card BIOS displays the **Press <Ctrl> <A> for SCSISelect (TM) Utility!** message on your screen during system bootup. If this setting is disabled, you can still invoke the **SCSISelect Utility** by pressing **<Ctrl> <A>** after the SCSI card BIOS banner appears.
- **BIOS Support for Bootable CD-ROMs**—When set to **Enable**, the SCSI card BIOS allows booting from a CD-ROM drive.
- **BIOS Support for Int 13 Extensions**—When set to **Enable**, the SCSI card BIOS supports Int 13h extensions as required by Plug-and-Play. The setting can be either enabled or disabled if your system is not Plug-and-Play.

Using SCSI Disk Utilities

To access the SCSI disk utilities, follow these steps:

- 1 Select the **SCSI Disk Utilities** option from the menu that appears after starting **SCSISelect**. **SCSISelect** scans the SCSI bus (to determine the devices installed) and displays a list of all SCSI IDs and the devices assigned to each ID.
- 2 Use the **↑** and **↓** keys to move the cursor to a specific ID and device, then press **Enter**.
- 3 A small menu appears, displaying the options **Format Disk** and **Verify Disk Media**.
 - **Format Disk**—Allows you to perform a low-level format on a hard disk drive. *Most SCSI disk devices are preformatted at the factory and do not need to be formatted again.* Each hard disk drive must be low-level formatted before you can use your operating system's partitioning and file preparation utilities, such as MS-DOS **Fdisk** and **Format**.



Caution: A low-level format destroys all data on the drive. Be sure to back up your data before performing this operation. You *cannot* abort a low-level format once it is started.

- **Verify Disk Media**—Allows you to scan the media of a hard disk drive for defects. If the utility finds bad blocks on the media, it prompts you to reassign them; if you select **yes**, those blocks are longer used. You can press **Esc** at any time to abort the utility.

Obtaining SCSI Cables

High-quality cables are required in high-performance SCSI systems to ensure data integrity. Adaptec provides the highest quality SCSI cables designed specifically for use with Adaptec SCSI cards. For purchasing information, contact Adaptec at 1-800-442-SCSI (7274), Monday to Friday, from 6 a.m. to 5 p.m. (Pacific Time).

When ordering cables, note the SCSI Card 2940UW connector and your peripheral's connector, and select a cable that best meets your needs. Figure 2 shows the connectors on the SCSI Card 2940UW.

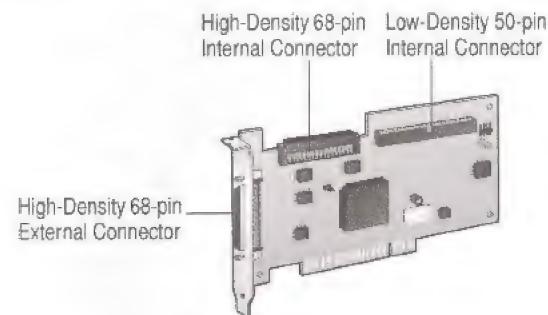


Figure 2. SCSI Card 2940UW Connectors

External Cables

Table 3. External Cables

Description	Cable Model Number	Ordering Name
DB25-pin to DB25-pin Cable (1 m)	100	ACK-D2D CBL KT(97)
DB25-pin to High-Density 50-pin Cable (1 m)	200	ACK-D2H CBL KT(97)
High-Density 50-pin to High-Density 50-pin Cable (1 m)	300	ACK-H2H CBL KT(97)
High-Density 50-pin to Centronics 50-pin Cable (1 m)	500	ACK-H2L CBL KT(97)
High-Density 68-pin to High-Density 68-pin Cable (1 m)	600	ACK-W2W-E

External Connector Diagrams



Figure 3. High-Density 68-pin



Figure 4. High-Density 50-pin



Figure 5. Low-Density 50-pin



Figure 6. DB25-pin

Examples of Cabling Wide and Narrow External SCSI Peripherals

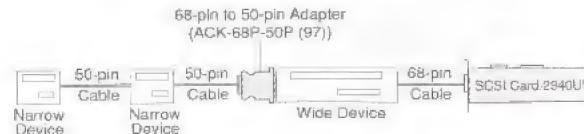


Figure 7. Connecting Narrow and Wide External Peripherals

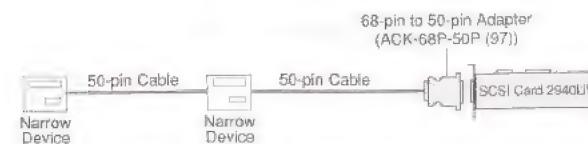


Figure 8. Connecting Narrow External Peripherals

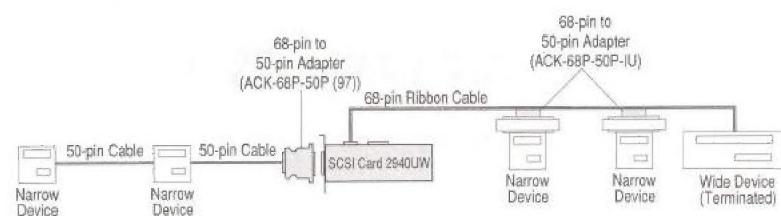


Figure 9. Connecting Narrow External Peripherals and Internal Narrow and Wide Peripherals

Internal Cables

Table 4. Internal Cables

Description	Cable Model Number	Ordering Name
50-pin with connector for 4 peripherals + SCSI card (1.5 m)	1100	ACK-INT5
68-pin with connectors for 4 peripherals + SCSI card (1.1 m)	1200	ACK-W2W-E

Internal Connector Diagrams



Figure 10. Low-Density 50-pin



Figure 11. High-Density 68-pin

Adapters, Converters, and Terminators

Table 5. Adapters, Converters, and Terminators

Description	Cable Model Number	Ordering Name
External High-Density 68-pin to External High-Density 50-pin Adapter	400	ACK-68P-50P (97)
Internal High-Density 68-pin to Internal Standard 50-pin Adapter	450	ACK-68P-50P-IU
Internal High-Density 50-pin to External High-Density 50-pin Cable with 2 Additional Internal Positions	700	ACK-50I-50E CBL KT (98)
68-pin Terminator Block	800	ACK-68 TERM CBL KIT
50-pin Terminator Block	900	ACK-50 TERM CBL KIT

Maximum Cable Lengths

The total length of cabling (internal and external) on the SCSI bus may not exceed the maximum lengths listed in Table 6.

Table 6. Maximum Cable Lengths

Maximum Cable Length	Data Transfer Rate	Maximum Peripherals Supported ¹
3 m (9.8 ft)	Fast SCSI (10 MBytes/sec)	7
3 m (9.8 ft)	Wide SCSI (20 MBytes/sec)	15
3 m (9.8 ft)	Ultra SCSI (40 MBytes/sec for 16-bit, 20 MBytes/sec for 8-bit)	4
1.5 m (4.9 ft)	Ultra SCSI (40 MBytes/sec for 16-bit, 20 MBytes/sec for 8-bit)	5-8 ²

¹ Not including the SCSI card.

² Ultra SCSI data transfer rates do not currently support more than eight devices.

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Federal Communications Commission Radio Frequency Interference Statement

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. However, if this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Use a shielded and properly grounded I/O cable and power cable to ensure compliance of this unit to the specified limits of the rules.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.



Canadian Compliance Statement

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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